



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,219	01/02/2002	Chun-Chi Ke	56843 (71987)	2017
21874	7590	12/05/2003	EXAMINER	
EDWARDS & ANGELL, LLP P.O. BOX 9169 BOSTON, MA 02209			NGUYEN, DILINH P	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	10/039,219	KE ET AL.	
	Examiner	Art Unit	
	DiLinh Nguyen	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase: "...preventing flash of a resin compound that forms the encapsulant on the exposed die pad and the inner leads due to the reduced spacing between the adjacent middle portions of the leads..." is not understood.

One skilled in the art should not be able to understand how to prevent flash of a resin compound that forms the encapsulant on the exposed die pad and the inner leads due to the reduced spacing between the adjacent middle portions of the leads.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitaoka et al. (U.S. Pat. 5523608) in view of Mizue et al. (U.S. Pat. 6315465).

Kitaoka et al. disclose a semiconductor device (fig. 1, column 3, lines 45 et seq.) comprising:

a lead frame having a first side and a second side, and formed with a die pad 7 and a plurality of leads surrounding the die pad, wherein the leads are each defined into an inner lead 3, an outer lead 4 and a middle portion positioned between the inner lead and the outer lead;

an encapsulant 8 for encapsulating the lead frame with the outer leads being exposed, wherein a cavity is formed in the encapsulant for exposing the die pad and the inner leads on the first side of the lead frame, allowing a semiconductor chip 1 and bonding wires 5 to be received in the cavity and a resin compound that forms the encapsulant on the exposed die pad and the inner leads;

the semiconductor chip 1 mounted in the cavity on the die pad of the first side of the lead frame;

bonding wires 5 formed in the cavity for electrically connecting the semiconductor chip to the inner leads of the lead frame; and

a lid 11 adhered onto the encapsulant for covering an opening of the cavity.

Kitaoka et al. fail to disclose each of the middle portions extends outwardly at sides thereof to form protrusions.

Mizue et al. disclose a semiconductor device (fig. 3) comprising:

a lead frame, wherein the leads are each defined into an inner lead, an outer lead and a middle portion positioned between the inner lead and the outer lead, and each of the middle portions extends outwardly at sides thereof to form protrusions for reducing spacing between the adjacent middle portions of the leads. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was

made to modify the device of Kitaoka et al. to maintain the stability and reliability for the semiconductor device, as shown by Mizue et al.

- Regarding claim 2, it would have been an obvious to form the middle portions of the leads are arranged in a manner that spacing between the adjacent middle portions is 0.10 mm, or equal to or smaller than 0.15 mm because the Applicant has presented no discussion in the specification which convinces the particular the spacing between the adjacent middle portions is 0.10 mm, or equal to or smaller than 0.15 mm is anything more than one of numerous size. A person of ordinary skill in the art would find obvious for the purpose of providing support. It appears that the middle portions of the leads are arranged in a manner that spacing between the adjacent middle portions is 0.10 mm, or equal to or smaller than 0.15 mm produce no functional differences and therefore would have been obvious.

3. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitaoka et al. (U.S. Pat. 5523608) in view of Mizue et al. (U.S. Pat. 6315465) and further in view of Waki et al. (U.S. Pat. 5479051).

Kitaoka et al. and Mizue et al. fail to disclose a first tape adhered to the second side of the lead frame and a second tape adhered to the first side of the lead frame.

Waki et al. disclose a semiconductor device (figs. 3A and 7A) comprising :

a tape 12 adhered to the first side of the lead frame in a manner free of interference with arrangement of the bonding wires (fig. 3A, column 4, lines 14-22) and plurality of tapes 22a and 22b adhered to the second side of the lead frame (fig. 7A).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Kitaoka et al. and Mizue et al. to increase the quality and reliability for the lead frame, as shown by Waki et al.

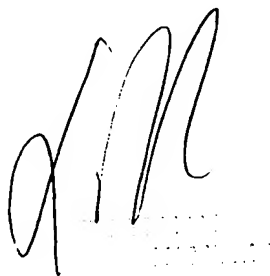
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

DLN
November 28, 2003

A handwritten signature in black ink, appearing to be 'DLN', with a faint circular stamp or watermark visible beneath it.